

APPLICANTS: Vladimir SHLAIN et al.
SERIAL NO.: 10/026,886
FILED: December 27, 2001
Page 2

AMENDMENTS TO THE CLAIMS

Kindly amend the claims as follows:

1. (currently amended) A system for automatic ~~object~~ defect classification comprising:

computer-implemented means for applying a plurality of binary rules to ~~an object a defect image~~, wherein any of said binary rules is operative to classify said ~~object defect image~~ to one of a pair of classes to one class of a class pair taken from a plurality of class pairs; and

computer-implemented means for determining to which of said classes said ~~object defect image~~ is classified the greatest number of times subsequent to the application of said binary rules.

2. (currently amended) A system according to claim 1 and further comprising computer-implemented means for automatically generating said binary rules.

3. (currently amended) A system according to claim 2 and further comprising a learning set having a plurality of said ~~objects~~ defect images, wherein each of said objects in said learning set is pre-classified as belonging to one of said classes, and wherein said means for automatically generating is operative to generate said binary rules using said learning set.

4. (original) A system according to claim 2 wherein said means for automatically generating is operative to generate using supervised learning.

5. (currently amended) A system according to claim 1 wherein:

each of said binary rules includes a first part and a second part,

said means for determining is operative to calculate using said first part a degree of belonging of said ~~object~~ defect image to one of said classes in said class pair,

APPLICANTS: Vladimir SHLAIN et al.
SERIAL NO.: 10/026,886
FILED: December 27, 2001
Page 3

said means for determining is operative to calculate using said second part a degree of belonging of said ~~object~~ defect image to the other of said classes in said class pair, and

said means for applying is operative to select one of said classes in said class pairs to which said degree of belonging of said ~~object~~ defect image is greater.

6. (currently amended) A system according to claim 5 wherein each of said parts comprises at least one fuzzy logic formula including at least one named predicate related to a numerical characteristic of one of said ~~objects~~ defect images, and wherein said means for determining is operative to calculate said degrees of belonging using said fuzzy-logic formulae.

7. (cancelled)

8. (currently amended) A system according to claim 1 wherein said ~~objects~~ defect images are semiconductor defect images and wherein said classes describe defect classes for application in semiconductor production.

9. (currently amended) A method for automatic ~~object~~ defect classification comprising:
applying a plurality of binary rules to an ~~object~~ defect image, wherein any of said binary rules is operative to classify said ~~object~~ defect image ~~to one of a pair of a plurality of classes~~ to one class of a class pair taken from a plurality of class pairs; and
determining to which of said classes said ~~object~~ defect image is classified the greatest number of times subsequent to the application of said binary rules.

10. (currently amended) A method according to claim 9 and further comprising:
pre-classifying a plurality of ~~objects~~ defect images in a learning set as belonging to one of said classes; and

APPLICANTS: Vladimir SHLAIN et al.
SERIAL NO.: 10/026,886
FILED: December 27, 2001
Page 4

automatically generating said binary rules using said learning set, wherein any of said binary rules of any of said pairs of classes is generated using any of said ~~objects~~ defect images in said learning set that are pre-classified as belonging to said pair of classes.

11. (original) A method according to claim 10 wherein said automatically generating step comprises generating using supervised learning.

12. (currently amended) A method according to claim 9 wherein:

said determining step comprises calculating a degree of belonging of said ~~object~~ defect image to one of said classes in said class pair using a first part of each of said binary rules,

said determining step comprises calculating a degree of belonging of said ~~object~~ defect image to the other of said classes in said class pair using a second part of each of said binary rules, and

said applying step comprises selecting one of said classes in said class pairs to which said degree of belonging of said ~~object~~ defect image is greater.

13. (currently amended) A method according to claim 12 wherein said determining step comprises calculating said degrees of belonging using a fuzzy-logic formula included in each of said parts and including at least one named predicate related to a numerical characteristic of one of said ~~objects~~ defect images.

14. (new) A computer-implementable program embodied on a computer-readable medium, the computer program comprising:

a first code segment operative to apply a plurality of binary rules to a defect image, wherein any of said binary rules is operative to classify said defect image to one of a pair of a plurality of classes; and

APPLICANTS: Vladimir SHLAIN et al.
SERIAL NO.: 10/026,886
FILED: December 27, 2001
Page 5

a second code segment operative to determine to which of said classes said defect image is classified the greatest number of times subsequent to the application of said binary rules.